

# SPECweb99 Result

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Fujitsu Siemens Computers: PRIMEPOWER 900  
Zeus Technology: Zeus WebServer 4.2r2

SPECweb99 = 13278

Test Date: May-2003  
Tester: Fujitsu Siemens

Hardware Avail: Jun-2003 OS Avail: Feb-2003 HTTP Software Avail: Mar-2003 Sup. Software Avail: -- SPEC license #: 22

## Hardware

Vendor: Fujitsu Siemens Computers  
Model: PRIMEPOWER 900  
Processor: 1350 MHz SPARC64  
# Processors: 8 cores, 8 chips, 1 core/chip  
Primary Cache: 128KBI+128KBD on chip  
Secondary Cache: 2MB(I+D) on chip  
Other Cache: None  
Memory: 64GB  
Disk Subsystem: 12 x 72 GB  
Disk Controllers: Dual Channel Ultra SCSI  
Other Hardware: Switches: See notes

## Software

Operating System: Solaris 8 2/02  
File System: VxFS (for non-root disks)  
Other Software: NCA

## HTTP Software

Vendor: Zeus Technology  
HTTP Software: Zeus WebServer 4.2r2  
API: Zeus PEPP 0.6 ISAPI  
Server Cache: SNCA  
Log Mode: SNCA Binary CLF

## Test Sponsor

Test Date: May-2003  
Tested By: Fujitsu Siemens  
SPEC License: 22

## Network

# of Controllers: 16  
Network Controllers: Gigabit Ethernet X1141A-U  
# of Nets: 16  
Type of Nets: Gigabit Ethernet  
Network Speed: 1 Gb/sec  
MSL (sec): 30 (Non RFC1122)  
Time-Wait (sec): 60 (Non RFC1122)  
MTU: 1500

## Clients

# of Clients: 80  
Model: 9xPRIMEPOWER 650 (PW) + 10xPRIMERGY 470 (PY)  
Processor: 810MHz SPARC64 (PW) / 400MHz Pentium II (PY)  
# of Processors: 6 (PW) / 2 (PY)  
Memory: 4 GB (PW) / 256 MB (PY)  
Network Controller: FastEthernet X1093A-U (PW) / Intel PRO1000 (PY)  
Operating System: Solaris 8 2/02 (PW) / Solaris 7 (PY)  
Compiler: GCC 2.95.2 (PW and PY)

## Notes/Tuning Information

### Operating System Notes

Operating System settings in /etc/system

\_\_ General settings:

\_\_set sq\_max\_size=0 (unlimited messages allowed on each IP queue)  
\_\_set segmap\_percent=90 (def: 12, Size of kernel segmap segment)  
\_\_set rlim\_fd\_max=450000 (def: 1024 file descriptors)  
\_\_set rlim\_fd\_cur=450000 (def: max (256,rlim\_fd\_max))  
\_\_set autoup=60 (def: 30, seconds before dirty page buffers are sync'd)  
\_\_set maxphys=65536 (def: 131072, maximal size of physical I/O requests)  
\_\_set maxpgio=128 (def: 40, maximal number of page I/O requests that can be queued)

\_\_ Specific modules:

\_\_set ge:ge\_intr\_mode=1 (bypass normal communication layer queuing)  
\_\_set ge:ge\_nos\_tmds = 8192 (def: 512, transmit descriptors)  
\_\_set ge:ge\_tx\_fastdvma\_min = 95 (def: 1024, min packet size to use fast dvm a interface)  
\_\_set ge:ge\_tx\_bcopy\_max = 96 (def: 256, Maximum packet size to use copy of buffer)  
\_\_set ge:ge\_nos\_txdvma = 8192 (def: 512, transmit descriptors)  
\_\_set ge:ge\_pci\_intr\_blank\_time=24 (def: 6, Number of clock ticks to wait since last receive interrupt asserted)  
\_\_set pcipsy:pci\_stream\_buf\_enable = 0 (disable PCI cache streaming)  
\_\_set nca:nca\_conn\_req\_max\_q=10240 (def: 256, Max number of TCP conns to listen to)  
\_\_set nca:nca\_conn\_req\_max\_q0=10240 (def: 1024, Max number of 3 way handshakes open)  
\_\_set nca:nca\_ppmax=7500000 (def: 25% of physical memory, Max amount of physical memory, in pages. used by NCA)  
\_\_set nca:nca\_vpmax=7500000 (def: 25% of virtual memory, Max amount of virtual memory, in pages, used by NCA)  
\_\_set nca:nca\_conn\_hash\_size=393209 (def: 383, hash table size)  
\_\_set nca:ncaurhash\_sz = 289669 (def: 8053, URI hash table size)  
\_\_set nca:ncavnodehash\_sz = 289669 (def: 12281, Controls the vnode hash table size in the NCA module)  
\_\_set nca:ncappthresh = 128 (def: 4, threshold in pages to control when to stop using the default kernel memory allocator)  
\_\_set vxio:vol\_maxio=128

\_\_ Settings in NCA control files (/etc/nca)

For more  
Information  
Contact

SPEC

info@spec.org  
http://www.spec.org

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## Notes/Tuning Information (Continued)

### Operating System Notes (Continued)

\_\_nca.if: ge0 ge1 ge2 ge3 ge4 ge5 ge6 ge7 ge8 ge9 ge10 ge11 ge12 ge13 ge14 ge15 hme1  
\_\_ncalogd.conf: status=enabled, logd\_file\_size=2000000000  
\_\_ncalogd.conf: logd/path\_name=/logs/log0 ... /logs/log15

#### Dynamic Settings after reboot

\_\_nnd set /dev/nca nca\_use\_segmap 1 (def: 0, controls whether NCA uses the kernel segmap to share physical pages for Unix files)

#### Disk usage:

\_\_1 disk (internal): OS, Paging, Zeus, and /export/home  
\_\_10 disks (striped): /logs (Zeus Webserver binary CLF files, NCA log files)  
\_\_10 disks (striped): /web99 except file\_set (r/w portion of docroot, e.g. post.log)  
\_\_10 disks (striped): /web99/file\_set (r/o portion of docroot)  
\_\_1 disk unused  
\_\_File Systems, Striping with Veritas Volume Manager  
\_\_Mount /web99/file\_set with noatime option

Tuning disclosure: Fujitsu-Siemens-20011126.txt

### HTTP Software Notes

Zeus 4.2r2 global.cfg performance parameters

\_\_For explanation and default values,  
\_\_refer to: <http://support.zeus.com/faq/entries/tuning.html>

\_\_tuning!modules!stats!enabled no  
\_\_tuning!accelerator!nca!enabled yes  
\_\_tuning!num\_children 16  
\_\_tuning!num\_cgid 16  
\_\_tuning!cache\_files 419999  
\_\_tuning!cache\_max\_bytes 0  
\_\_tuning!cache\_small\_file 4096  
\_\_tuning!cache\_large\_file 1048576  
\_\_tuning!cache\_stat\_expire 31536000  
\_\_tuning!cache\_flush\_interval 31536000  
\_\_tuning!cache\_cooling\_time 0  
\_\_tuning!sendfile yes  
\_\_tuning!listen\_queue\_size 8192  
\_\_tuning!so\_wbuff\_size 1048576  
\_\_tuning!so\_rbuff\_size 0  
\_\_tuning!modules!cgi!cleansize 0  
\_\_tuning!cbuff\_size 65536  
\_\_tuning!sendfile\_minsize 1  
\_\_tuning!sendfile\_maxsize 1048576  
\_\_tuning!sendfile\_reservefd 299993  
\_\_tuning!bind\_any no  
\_\_tuning!softservers no

Other Zeus 4.2r2 global.cfg parameters

gid root  
uid root  
controlport 9080  
controlallow 127.0.0.1

Other Zeus 4.2r2 virtual\_server performance parameters

\_\_(only those relevant for performance)  
\_\_in %zeushome%/web-4.2r2/runningsites/websvr:  
\_\_dnslookup no  
\_\_docroot /web99  
\_\_modules!cgi!enabled yes  
\_\_modules!isapi!enabled yes

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## Notes/Tuning Information (Continued)

### HTTP Software Notes (Continued)

`__modules!log!enabled` no

### HTTP API Notes

Zeus API toolkit 0.6 used for dynamic content  
Archived in Fujitsu-Siemens-20011126-API.tar.gz  
PW code compiled with Sun Studio 7  
./Configure --sendfile=no --locking=semop  
Compilation options:  
-I\$INCLUDES -xarch=v8plus -Kpic -dalign -fns -fsimple=2 -ftrap=%none -xlibmil -xO5

### Client Notes

Network Tuning parameters (/usr/bin/ndd):  
ndd -set /dev/tcp tcp\_smallest\_anon\_port 2048 (def: 32768)  
ndd -set /dev/tcp tcp\_time\_wait\_interval 60000 (def: 240000 ms = 4 mins.)  
Client code generated with "Configure OPTIMIZE="-O2 -Wall"; export OPTIMIZE  
and with ./configure --enable-posix-threads --enable-gethostbyname\_r --enable-pthread\_scope\_system  
--enable-rlimit --enable-nanosleep --enable-safe-usleep=no

Clients and Server connected via a Cisco Catalyst 6500 Switch (PW clients to server)  
plus 2 BayStack 450-24T switches (PY clients to server)  
19 physical clients (9xPW plus 10xPY), 80 virtual clients (one per Ethernet line)

Server system board 0, slot 0 (66 MHz) connected to 4 quad Ethernet lines from PW client 1, plus 2 from PW client 9  
Server system board 0, slot 1 (33 MHz) connected to 4 quad Ethernet lines from PW client 1  
Server system board 0, slot 2 (66 MHz) connected to 4 quad Ethernet lines from PW client 2, plus 1 from PW client 6  
Server system board 0, slot 5 (66 MHz) connected to 4 quad Ethernet lines from PW client 2, plus 1 from PW client 6  
Server PCI box 0, slot 0 (66 MHz) connected to 4 quad Ethernet lines from PW client 3, plus 2 from PW client 9  
Server PCI box 0, slot 1 (33 MHz) connected to 4 quad Ethernet lines from PW client 3  
Server PCI box 0, slot 3 (66 MHz) connected to 4 quad Ethernet lines from PW client 4, plus 1 from PW client 8  
Server PCI box 0, slot 7 (66 MHz) connected to 4 quad Ethernet lines from PW client 4, plus 1 from PW client 8  
Server system board 1, slot 0 (66 MHz) connected to 4 quad Ethernet lines from PW client 5, plus 2 from PW client 9  
Server system board 1, slot 1 (33 MHz) connected to 4 quad Ethernet lines from PW client 5  
Server system board 1, slot 2 (66 MHz) connected to 5 PY clients  
Server system board 1, slot 5 (66 MHz) connected to 5 quad Ethernet lines from PW client 6  
Server PCI box 1, slot 0 (66 MHz) connected to 4 quad Ethernet lines from PW client 7, plus 2 from PW client 9  
Server PCI box 1, slot 1 (33 MHz) connected to 4 quad Ethernet lines from PW client 7  
Server PCI box 1, slot 3 (66 MHz) connected to 5 PY clients  
Server PCI box 1, slot 7 (66 MHz) connected to 5 quad Ethernet lines from PW client 8

Used prime client separate from the load generators:  
`__PRIMERGY` 470, 2 x 400 MHz Pentium II, Solaris 7